

**REMARKS**

Claim 1-67 have been cancelled and claim 68 has been amended. Claims 71-79 and 95-130 have been withdrawn. Claims 68-70 and 80-94 are therefore presently pending and under consideration in this application. The amendments to the claims are fully supported by the original claims and specification. For example, at page 4, lines 12-21, (wherein the entire plant is resistant to viral disease). No new matter has been added by the amendments made herein. Entry of the amendments at this time is therefore respectfully requested.

Claims 68-69 were rejected under §102(b) as being anticipated by Dougherty et al. (U.S. Patent No. 5,583,021, hereinafter "the '021 patent"). Before addressing the specific arguments raised in the Office Action, it is important to point out that the novelty of the present invention resides in the fact that the entire engrafted plant, *i.e.*, the plant in all its parts, including the transgenic rootstock and the non-transgenic scion is resistant to the viral disease. Applicant further clarifies this point in amended claim 1. Amended claim 1 now recites "*A plant comprising a transgenic rootstock resistant to a viral disease other than by means of expression of an anti-viral protein and a scion susceptible to the viral disease, wherein the entire engrafted plant is resistant to said viral disease and wherein the rootstock is the only transgenic part of the plant*" (emphasis added).

In view of the above, Applicant respectfully traverses the Examiner's statement that the '021 patent teaches all the limitations set forth in the instant claims, 68-69. Contrary to the statement on pages 3 and 4 of the Office Action, the '021 patent does not disclose or teach each of the elements of presently claimed invention. In fact, the '021 patent discloses that "*Inoculation of the susceptible portion of the engrafted plant consistently results in TEV infection and typical symptom induction, while the 2RC-6.13 tissue remained free of TEV symptoms. This result was consistent regardless of the type of graft made*" (Example 2, column 22, emphasis added). Thus, not only does '021 patent fail to teach or even suggest an entire engrafted plant resistant to the viral disease, but the '021 patent actually teaches and demonstrates the opposite – *i.e.*, that use of the method disclosed therein results in the scion remaining susceptible to the viral disease. Thus, Applicant respectfully request that this rejection be withdrawn.

Claims 68-70, 80-83 and 85-93 were rejected under 35 USC §103(a) as being unpatentable over the '021 patent as described above, in view of Heifetz et al. (U.S. Patent No. 7,019,195, hereinafter "the '195 patent") and Sonoda et al. (2000, *The Plant Journal* 21:1-8) for the reasons set forth on pages 4-7 of the Office Action. Applicant respectfully traverses

As described hereinabove, the '021 patent fails to teach that the entire engrafted plant is resistant to the viral disease or method of producing the same. In fact, as pointed out above, the '021 patent actually teaches and demonstrates away from the invention – *i.e.*, teaching that the non-transgenic scion remained susceptible to the viral disease. At page 6 of the Office Action, The Examiner further lays out additional claim elements which the '021 patent fails to teach, including: 1) a transgenic rootstock resistant to a viral disease comprising a DNA construct designed for generating siRNAs targeted to at least one segment of the viral genome; 2) that the DNA construct comprises nucleic acid sequence encoding RNA sequence that forms at least one dsRNA that mediates cleavage of the at least one segment of viral genome; 3) that the dsRNA comprises a first and a second nucleotide sequence each comprising at least 20 contiguous nucleotides having at least 90% sequence identity to a segment of said viral genome; 4) that a spacer is between the first and the second nucleotide sequence; 5) that the first and second nucleotide sequences operably linked to the same promoter; 6) that the virus is a beet necrotic yellow vein virus (BNYVV) or a potyvirus; and 7) that the at least one segment of the viral genome comprises fragments of a nucleic acid sequence having at least 90% identity to SEQ ID NO:2.

The '195 patent fails to remedy the deficiencies of the '021 patent. The '195 patent is directed to and teaches modifying plant tissue (not rootstock) with two different polynucleotides derived from two different viruses. Thus, a person skilled in the art would not have combined the '021 patent and the '195 patent in order to achieve the instant invention. Furthermore, even if they did combine the teaching, the combination of the '021 patent and the '195 would not result in the currently claimed invention – *i.e.*, a plant comprising a transgenic rootstock resistant to a viral disease other than by means of expression of an anti-viral protein and a scion susceptible to the viral disease, wherein the entire engrafted plant is resistant to said viral disease and the

rootstock is the only transgenic part of the plant. In fact as pointed out above, the combination of the teaching of the '195 patent and the '021 patent would result in a plant, wherein the scion would remain susceptible to the viral disease.

Sonoda et al. also fail to remedy the deficiencies of the '021 and '195 patents. Contrary to the Office Action, Sonoda et al. do not teach or suggest the presently claimed invention, wherein the entire engrafted plant is resistant to the viral disease while only the rootstock is transgenic. In fact, Sonoda et al., actually discloses and teaches away from the presently claimed invention. Sonoda actually teaches that that transmission of resistance from rootstock to scions in engrafted plants requires the presence of the homologous transgene in the scion (see Sonoda et al. page 3, right column second full paragraph – *Graft transmission of PTGS requires the presence of the transgene in the scion*). Prior to Applicant's invention, it was taught that (including the disclosure of the '021 patent) that susceptible scions (harboring a non-homologous transgene) engrafted on resistant rootstocks remain susceptible. Sonoda et al. simply support this prior art understanding; Sonoda teaches that in order to confer resistance to the entire plant the corresponding transgene needs to be present in the scion. Nowhere in Sonoda et al., or other prior art references, is it described that viral resistance may be transferred from the transgenic rootstock to a non-transgenic scion to successfully confer resistance to the entire engrafted plant and in fact it teaches the opposite. Thus, there is no motivation to combine the references as suggested in the Office Action.

Therefore, the cited prior art does not reasonably support a *prima facie* case of obviousness. Applicant therefore respectfully requests that this rejection be withdrawn and the claims be allowed.

Claims 68-70 and 80-93 were rejected under 35 USC §103(a) as being unpatentable over the '021 patent as for claims 68-69, in view of the '195 patent and Sonoda et al. as for claims 68-70, 80-83, 85-93, further in view of AB489142 (2001, Genbank Accession Number), teaching an intron sequence of CAT1 having sequence ID NO:3.

Applicant respectfully submits that, as described hereinabove, the heart of the invention is directed to an engrafted plant comprising a transgenic rootstock resistant to a viral disease

AMENDMENT AND RESPONSE

Docket No. 15872.018

Title: "Engrafted Plants Resistant to Viral Diseases and Methods of Producing Same"  
U.S. Serial No. 10/590,376

other than by means of expression of an anti-viral protein and a scion susceptible to the viral disease, wherein the entire engrafted plant is resistant to said viral disease and the rootstock is the only transgenic part of the plant. (Emphasis added). As detailed above, the '021 patent, the '195 patent, and Sonoda fail to teach or suggest the presently claimed invention, alone or in combination and actually teach away from the presently claimed invention. AB489142 does nothing to remedy the deficiencies of the cited art or to correct the teachings of the prior art that taught away from the invention. Thus, there is still no motivation to combine the references as suggested in the Office Action to obtain the presently claimed invention.

Therefore, Applicant respectfully requests that this rejection be withdrawn as well and that the claims be allowed.

If there are any questions, the Examiner is invited to call Applicant's representative Rodney Fuller at (602) 916-5404 to resolve any remaining issues to expedite the allowance of this application.

Respectfully submitted,

July 20, 2009

Date

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